

# DIET OF REGENT PARROTS (*POLYTELIS ANTHOPEPLUS*) IN THE SOUTH-WEST OF WESTERN AUSTRALIA.

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## INTRODUCTION

There are few records of the diet of Regent Parrots in Australia. Gould (1865) indicates that they 'feed on the seeds, buds, blossom and nectar from the white gum. Forshaw (1969) lists their general foods as the seeds of grasses and herbaceous plants, and fruits, berries, nuts, leaf buds, nectar, blossom and green vegetable matter. For the eastern subspecies (*P. anthopeplus anthopeplus*) Sontner (1984) records them feeding on Box Mistletoe (*Amyema miquelii*) and Burbidge (1985) and Beardsell (1985) list 40 species of plants based on observations of feeding birds. In Western Australia Carter (1924) reported the western subspecies (*P. a. westralis*) feeding on the seeds of the Jam Tree (*Acacia acuminata*). The Western Australian Museum has records of them feeding on Wheat (*Triticum aestivum*) and Native Cherry (*Exocarpus* sp.) (R. E. Johnstone pers comm.), but there have been no systematic studies of their foods.

This study started in 1970-72 (see Long 1984a and 1985) when Regent Parrots were a declared pest species under the auspices of the Agriculture and Related Resources Protection Act (1976) because of 'former' depredations to grain and fruit crops in the 1940s. However, since this time concurrent with firstly a decline then an increase in numbers of Regent Parrots this declaration was changed to one of protection for the species under the Wildlife Conservation Act (1950). Although there are few old records of any damage caused by Regent Parrots, in the late 1980s they were found to be feeding on a variety of cultivated fruits in the Kendenup area. This paper describes the diet of 243 Regent Parrots.

## METHODS

For study (a) the stomach, crop and proventriculus were taken from 145 Regent Parrots shot between September 1970 and October 1972. The contents of each was stored in 10% formalin for later identification. In study (b) a further 98 Regent Parrots were

collected in January and February 1989 using mist nets and shot guns during trials on control techniques for parrots. The stomachs and crops from these parrots were placed in 70% alcohol also for later examination.

The 145 parrots collected for study (a) came mainly from the Wickepin shire (165 km SSE Perth), but also from an area bounded by Corrigin (196 km ESE of Perth) in the north, Hyden (291 km ESE of Perth) in the east, Dumbleyung (234 km SE of Perth) in the south, to Wickepin in the east. A sample of five parrots was collected each month during the above period. Each monthly sample contained some parrots of each sex. They were collected from 14 different locations, of which five were within 5 km of wheat storage bins at railway sidings. Of the 145 parrots taken 88 were from the 5 localities near wheat storage bins.

The preserved food samples were washed, dried at 36°C, sorted and weighed. The identification of seeds was by comparison with seeds collected during and after the completion of the study, and with seeds from established reference collections.

The contents of the 98 crops for study (b) came from the Kendenup area (329 km SSE of Perth) in January – February 1989. The stomach and crop contents were removed from the liquid (alcohol), sorted by hand and examined while wet. An estimate was made of the items in the diet on the basis of :- those which constituted 25% or more of the sample scored '2' while those of a lesser amount scored '1'. Food items were identified by comparison with known specimens or by the Seed Testing Laboratories, Department of Agriculture, South Perth.

## RESULTS

No differences could be found for the items in the diet between the two years of the study so the data were pooled. No differences were found between adult, sub-adult, and juvenile, or male and female diets for either 1970–72 (study (a)) or 1989 (study (b)).

The five most common items for 1970–72 with a frequency greater than ten (10) (see Table 1) were wood chips (132), Eucalypt spp. seeds (118), Wheat (*Triticum aestivum*) (106), Storksbill (*Erodium* spp.) (35) and Native Cherry (*Exocarpus* sp.) fruits (12). For 1989 (see Table 2) these were wood chips (*Eucalyptus* spp.) (91), apple pulp (*Malus sylvestris*) (45), *Erharta calycina* (40), Onion Grass corms (*Romulea rosea*) (34) and Wheat (*Triticum aestivum*) (15).

### Specific Items in the Diet and their Identification

#### Eucalypt Species

Material from *Eucalyptus* spp. consisted of wood chips, seed and tissue from the hypanthium and ovary of fruits. The wood chips are probably consumed accidentally or to aid digestion while the seed

Table 1. Frequency of occurrence of items in diet of Regent Parrots 1970-72.

Item	J	F	M	A	M	J	J	A	S	O	N	D	Total
Myrtaceae													
<i>Eucalyptus</i> spp.	11	12	7	12	12	8	12	10	10	11	9	4	118
Wood chips?	10	13	8	12	13	11	11	12	15	11	11	5	132
Poaceae													
* <i>Triticum aestivum</i>	13	12	8	10	12	11	11	9	9	3	6	2	106
Geraniaceae													
* <i>Erodium</i> spp.	3								11	11	10		35
Santalaceae													
<i>Exocarpus</i> sp.	2				1	1			1	6	1		12
Cucurbitaceae													
* <i>Cucumis myriocarpus</i>					1		2	6	1		1		11
Chenopodiaceae													
<i>Chenopodium</i> spp.	3			3							2	1	9
<i>Atriplex</i> sp.	1												1
Polygonaceae													
* <i>Polygonum</i> sp.		1		1	4		1	1					8
Apiaceae													
* <i>Schoenalaena</i> sp.	2			1					1			3	7
Fabaceae													
* <i>Trifolium</i> sp.			2	4								1	7
Asteraceae													
* <i>Arctotheca</i> sp.		1			1						1		3
<i>Bradycombe</i> sp.								2		1			3
Solanaceae													
<i>Solanum</i> sp.						1				1			2
Mimosaceae													
<i>Acacia</i> sp.												2	2
Iridaceae													
* <i>Romulea rosea</i>												2	2
Brassicaceae													
* <i>Sysymbrium</i> sp.							1						1
* <i>Raphanus</i> sp.							1						1
Portulacaceae													
<i>Calandrinia</i> sp.										1			1
Family not known													
fruit?					2								2
blossom									1				1
Insects													
scale insects				2	1		2						5
Coleoptera larvae						1				2			3

\* = Introduced Species

and tissue from the hypanthium provide a genuine food source. *Eucalyptus* spp. other than wood chips made up 9.0% of the annual diet by weight and were found in 81.4% of the parrots examined in

the 1970–72 study. Wood chips made up 13.4% by weight and were found in 91.0% of the parrots. Together they are one of the more important items of the Regent Parrot diet. Wood chips were found in 92.8% of the birds in the 1989 study (study (b)).

Positive identification of the origin of wood chips recovered in study (a) was not achieved although the bulk of the material appeared to have been derived from eucalyptus fruits, boughs and stalks (pedicel, peduncle etc). Efforts were made to identify the fragments to specific level, but this was not possible with the techniques available at the time. A 'best estimate' indicated that at least 16% was from Salmon Gum (*E. salmonophloia*), but that a further 70% might also have been from this species. Ad hoc observations in the area suggest that Regent Parrots fed mainly on Salmon Gum and occasionally on Tall Sand Mallee (*E. eremophila*).

### Wheat (*Triticum aestivum*)

Grains of cultivated wheat formed the largest single item in the diet in study (a), 39.4% by weight, with a frequency of occurrence of 73.1% and were recorded in the diet in every month of the year. There was no difference in the amount or occurrence of wheat in the diet between those parrots collected within 2 km of rail sidings

Table 2. Frequency and percentage of items in diet of Regent Parrots 1989.

Item	Score 2' Major Item		Score 1' Minor Item		Total	
	No	%	No.	%	No.	%
<b>Myrtaceae</b>						
<i>Eucalyptus</i> spp. woodchips	76		15		91	92.8
<b>Poaceae</b>						
* <i>Avena sativa</i>	1	1.0	1	1.0	2	2.0
* <i>Digitaria</i> sp.			1	1.0	1	1.0
* <i>Erharta calycina</i>	25	25.5	15	15.3	40	40.8
* <i>Hordeum vulgare</i>	4	4.1	4	4.1	8	8.2
* <i>Triticum aestivum</i>	3	3.1	12	12.2	15	15.3
<b>Iridaceae</b>						
* <i>Romulea rosea</i> (corms)	2	2.0	7	7.1	9	9.2
* <i>Romulea rosea</i> (seeds)	14	14.3	20	20.4	34	34.7
<b>Rosaceae</b>						
* <i>Malus sylvestris</i> (seeds)			3	3.1	3	3.1
* <i>Malus sylvestris</i> (pulp)	31	31.6	15	15.3	46	46.9
<b>Fabaceae</b>						
* <i>Lupinus</i> sp.			1	1.0	1	1.0
* <i>Trifolium</i> sp.	1	1.0	8	8.2	9	9.2
<b>Asteraceae</b>						
* <i>Sonchus</i> sp.	2	2.0	1	1.0	3	3.1

\* = Introduced species

N = 98

Score 1 = < 25% of sample Score 2 = > 25% of sample

and those taken over 2 km away. However, no parrots were collected at railway sidings in the period from January to March when these localities were abandoned in favour of other feeding areas.

Although Kendenup is not a wheat growing area, wheat figured highly in the 1989 sample (frequency of occurrence 15.3%). It is thought that the grain was obtained from feed trails set out for sheep.

#### Other Seeds of Importance

The seeds of Storksbill (*Erodium* sp.) (14.3% by weight of annual diet) were obviously important seasonally (in spring) in 1970–72 as were the seeds of Paddy Melon (*Cucumis myrioccephalus*) (3.2% by weight) in winter, *Chenopodium*, *Schoenolaena*, *Trifolium* and *Polygonum* in summer – autumn, and *Acacia* seeds in summer.

In 1989 the seeds of Veldt Grass *Erharta calycina* and seeds of Onion Grass (*Romulea rosea*) were important items in the diet, while the corms of *R. rosea* were next most important.

#### Fruits

The fruits of *Exocarpus* sp. (2.3% by weight of annual diet) were important items in spring and autumn and the unidentified fruit (A) in autumn in the 1970–72 study. Apple pulp was an important food item at Kendenup in study (b) (frequency of occurrence 46.9% pulp and 3.1% seed). This is not surprising since the birds were all taken in apple orchards where most birds were feeding on the fruits.

#### Insects

Insects were an important dietary item during winter and spring in 1970–72 but did not appear in the diet in January–February 1989. Obviously insects are not part of the regular summer diet of Regent Parrots.

### DISCUSSION

This study (part (a)) and that of Burbidge (1985) and Long (1985 and 1990) and Mawson and Long (1993) indicate the reliance of Regent Parrots on *Eucalyptus* species both for nesting and as a food source. Burbidge (1986) reported that the single most important reason for the decline of Regent Parrots in eastern Australia has been the clearing of mallee scrub and the possible absence of a continuous food supply for the whole year.

Eight of the plant items listed here in the 1970–72 study and all those in the 1989 study were from introduced species of plants. This feature is known to be common to several of the Psittacidae whose food habits have been studied in Australia ((Western long-billed Corella (*Cacatua pastinator*) Smith and Moore 1991; Galah (*Cacatua roseicapillus*) Rowley 1990; Long-billed Corella (*Cacatua tenuirostris*)

Temby and Emison 1986; Red-capped Parrot (*Purpureicephalus spurius*), Ringnecked Parrot (*Barnardius zonarius*), and Western Rosella (*Platycercus icterotis*) Long 1984a, 1984b). Of 40 food items for the Regent Parrot listed by Burbidge (1985) and Beardsell (1985) at least 26 were from introduced plants.

The Regent Parrot populations in Western Australia quickly adapted to cultivated grain as a food source and increased in numbers after settlement (Serventy and Whittell 1976). Numbers continued to increase through the 1940s and 1950s until further clearing for farming began to have its effect and the species began to decline in the 1960s. Another factor contributing to the decline at this time was the development of bulk handling facilities erected at many sidings and changes from bagged grain to "on farm" handling of grain in bulk.

Continued clearing in the wheatbelt together with other factors (grazing by sheep and rabbits, fire, and salination have resulted in limited regeneration of trees and the degradation or elimination of much of the understorey (Long in Smith 1978; Saunders et al. 1985) appears to have contributed to this species continued demise in the central and northern wheatbelt (Long and Mawson unpublished data).

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